California Environmental Protection Agency AIR RESOURCES BOARD	ISHIKAWAJIMA-SHIBAURA MACHINERY CO., LTD.	EXECUTIVE ORDER U-R-026-0088 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engine and emission control system produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2004	4H3XL.954S5V	0.954	Diesel	3000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Indirect Diesel Injection	Loader, Tractor, Compressor, Generator and Industrial Equipment

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for hydrocarbon (HC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
8≤KW<19	Tier 1	STD	N/A	N/A	9.5	6.6	0.80	20	15	50
		CERT	--	--	6.7	1.5	0.67	14	2	23

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 5TH day of January 2004.

Allen Lyons, Chief
Mobile Source Operations Division

ATTACHMENT 1 OF 1

Engine Model Summary Form

Manufacturer: **Ishikawajima-Shibaura Machinery Co., Ltd.**

Engine category: **Nonroad CI**

EPA Engine Family: **4H3XL.954S5V**

Mfr Family Name: **N/A**

Process Code: **New Submission**

U-R-026-0088

1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
103-10	KD17/2500	17.0@2500	20.8+/-1.2	8.6+/-0.5	42.0@1800	21.2+/-1.1	6.3+/-0.3	IFI
103-10	KD17A/2500	17.0@2500	20.8+/-1.2	8.6+/-0.5	42.0@1800	21.2+/-1.1	6.3+/-0.3	IFI
103-10	KD18/2200	18.1@2200	20.5+/-1.8	7.4+/-0.7	44.8@2000	21.2+/-1.1	7.0+/-0.4	IFI
103-10	KD18/2300	18.4@2300	20.6+/-1.6	7.8+/-0.6	42.8@2000	21.8+/-1.1	7.2+/-0.4	IFI
103-10	KD18A/2200	18.1@2200	20.5+/-1.8	7.4+/-0.7	44.8@2000	21.2+/-1.1	7.0+/-0.4	IFI
103-10	KD18A/2300	18.4@2300	20.6+/-1.6	7.8+/-0.6	42.8@2000	21.8+/-1.1	7.2+/-0.4	IFI
103-10	KD19/2500	19.3@2500	20.5+/-1.2	8.4+/-0.5	42.7@2000	21.2+/-1.1	7.0+/-0.4	IFI
103-10	KD19A/2500	19.3@2500	20.5+/-1.2	8.4+/-0.5	42.7@2000	21.2+/-1.1	7.0+/-0.4	IFI
103-10	KD20/2800	20.4@2800	19.3+/-1.2	8.9+/-0.6	42.7@2000	21.2+/-1.1	7.0+/-0.4	IFI
103-10	KD20/3000G	19.8@3000	17.5+/-1.2	8.6+/-0.6	N/A	N/A	N/A	IFI
103-10	KD20A/2800	20.3@2800	19.3+/-1.2	8.9+/-0.6	42.7@2000	21.2+/-1.1	7.0+/-0.4	IFI
103-10	KD21/2800	21.2@2800	19.9+/-1.2	9.2+/-0.6	44.8@2000	21.2+/-1.1	7.0+/-0.4	IFI
103-10	KD21A/2800	21.2@2800	19.9+/-1.2	9.2+/-0.6	44.8@2000	21.2+/-1.1	7.0+/-0.4	IFI
103-10	KD22/2900	21.6@2900	20.4+/-1.1	9.7+/-0.5	39.1@2500	21.0+/-1.2	8.6+/-0.5	IFI
103-10	KD22/3000	22.3@3000	20.5+/-1.2	10.1+/-0.6	39.1@2500	21.2+/-1.1	8.7+/-0.5	IFI
103-10	KD22/3600G	22.1@3600	21.7+/-1.2	12.9+/-0.7	N/A	N/A	N/A	IFI
103-10	KD24/3500	23.5@3500	20.0+/-1.2	11.5+/-0.7	43.5@2400	21.8+/-1.1	8.6+/-0.4	IFI
103-10	KD24/3600	23.5@3600	18.7+/-1.2	11.1+/-0.7	39.1@2400	21.2+/-1.1	8.4+/-0.4	IFI
3YC1CA01	24/3350	24.4@3350	20.2+/-1.1	11.1+/-0.6	44.3@2400	21.8+/-1.1	8.6+/-0.4	IFI
3YC1DA01	25/3600	25.1@3600	19.9+/-1.2	11.8+/-0.7	41.1@3000	21.1+/-1.1	10.5+/-0.5	IFI
3YC1PA01	18/2400	18.1@2400	20.5+/-1.2	8.1+/-0.5	40.9@2000	21.2+/-1.1	7.0+/-0.3	IFI
S753-3	TC18/2600	18.5@2600	19.3+/-1.0	8.3+/-0.4	41.9@2000	21.6+/-1.1	7.1+/-0.4	IFI
S753-3	TZ18/3000	18.1@3000	16.6+/-0.8	8.2+/-0.4	33.3@2400	17.3+/-1.0	6.8+/-0.4	IFI